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(54) HYDROCARBON RESIN MODIFIED WITH FATTY ACID ESTER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a novel lowly viscous binder resin for toluene intaglio printing ink, having improved abrasion resistance and improved wettability with black ink, and showing a good heat stability in its production.

SOLUTION: This resin is produced by reacting (A) a 4-10C linear, branched or cyclic hydrocarbon having at least two unsaturations and/or an oligomer thereof having a degree of oligomeration of 2-10 with (B) a natural resin and/or a natural resin acid, (C) an α,β -olefinically unsaturated carboxylic acid and/or an anhydride thereof, (D) a divalent-metal compound, (E) a carboxylic acid selected from the group consisting of aromatic and saturated aliphatic carboxylic acids, and (F) a fatty acid ester. This reaction is carried out in at least two stages including stage 1 where compound (A) is reacted with compound (B) and stage 2 and subsequent stages where the reaction product from the preceding stage is reacted with at least one compound selected among compounds C, D, E and F at 100-300°C under the exclusion of water.

LEGAL STATUS

[Date of request for examination]

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CLAIMS

[Claim(s)]

[Claim 1] A) The shape of a straight chain of the carbon atomic numbers 4-10 with two or more unsaturated bonds, The oligomer which has the polymerization degree of 2-10 of an annular hydrocarbon and that or it branched and which is not mixed or mixed, B) Natural resin and/or a natural resin acid, C alpha and beta-olefin nature unsaturated carboxylic acid and/or its acid anhydride, D) The compound of the metal of bivalence, E The carboxylic acid chosen from the group which consists of aromatic series - and saturation aliphatic carboxylic acid, and F In the denaturation hydrocarbon resin manufactured by making fatty acid ester react React and the compound of A group is made to react with the compound of B group in a first stage story with the two or more numbers of phases. The above-mentioned denaturation hydrocarbon resin characterized by making each resultant of a preceding paragraph story react to the bottom of abatement of water in each consecutive phase at at least one kind of compound of at least one group of C, D, E, and F group, and the temperature of 100-300 degrees C.

[Claim 2] The total quantity for every group in a reaction mixture of each weight rate of each compound of each group is A. 10 - 90%, B) 10 - 90%, and C 0.1 - 20%, and D 0.1 - 20%, and E 0.1 - 20%, and F 0.1 - 40% -- it is -- the sum total of all these weight rates -- always -- 100% it is -- denaturation hydrocarbon resin according to claim 1.

[Claim 3] Denaturation hydrocarbon resin according to claim 1 which carries out the consecutiveness reaction in which a reaction with the components A and B in a first stage story is carried out under the pressure of 0.1-1.5MPa (1 - 15bar), and the components C, D, and E in a consecutive phase participate with atmospheric pressure.

[Claim 4] Denaturation hydrocarbon object resin according to claim 1 which reacts in a 220-270-degree C temperature requirement.

[Claim 5] Denaturation hydrocarbon resin according to claim 1 which has the shape of a straight chain of the carbon atomic numbers 4-10 with two or more unsaturated bonds and whose annular hydrocarbons are a cyclopentadiene and/or a dicyclopentadiene or it branched.

[Claim 6] Denaturation hydrocarbon resin according to claim 1 which is the cyclopentadiene and/or dicyclopentadiene which have the shape of a straight chain of the carbon atomic numbers 4-10 with two or more unsaturated bonds, and which the annular hydrocarbon mixed with piperylene depending on the case, and mixed with the indene depending on styrene and the case depending on the case or it branched.

[Claim 7] The denaturation hydrocarbon according to claim 1 whose compound of the metal of bivalence is a compound of calcium, magnesium, or zinc.

[Claim 8] The denaturation hydrocarbon according to claim 1 whose compound of the metal of bivalence is an oxide or a hydroxide.

[Claim 9] The denaturation hydrocarbon according to claim 1 whose compound of the metal of bivalence is a lime compound.

[Claim 10] The denaturation hydrocarbon according to claim 1 whose compound of the metal of bivalence is a magnesium compound.

[Claim 11] The denaturation hydrocarbon according to claim 1 whose compound of the metal of bivalence is a zinc compound.

[Claim 12] The denaturation hydrocarbon according to claim 1 which adds one or more kinds of condensation products of phenols and aldehydes.

[Claim 13] Weight average molecular weight Mw measured by the gel permeation chromatography by polystyrene Denaturation hydrocarbon according to claim 1 which is 500-5000g/mol.

[Claim 14] The denaturation hydrocarbon according to claim 1 whose melt viscosity of 250 degrees C and shearing inclination 100s-1 is 1,000 - 5,000mPas.

[Claim 15] React in two steps and the compound of A group and the compound of B group are made to react on the first stage story of that in the approach of manufacturing denaturation hydrocarbon resin according to claim 1. The above-mentioned approach characterized by making the resultant of a first stage story react to the bottom of at least one abatement of at least one kind of compound of a group, and water of C, D, E, and F at the temperature of 100-300 degrees C by the second stage story.

[Claim 16] Binder resin for pigment thick objects which consists of denaturation hydrocarbon resin according to claim 1.

[Claim 17] Binder resin for printing ink which consists of denaturation hydrocarbon resin according to claim 1.

[Claim 18] Binder resin for printing ink for offset printing which consists of denaturation hydrocarbon resin according to claim 1.

[Claim 19] Binder resin for printing ink for benzine intaglio printing which consists of denaturation hydrocarbon resin according to claim 1.

[Claim 20] Binder resin for printing ink for toluene intaglio printing which consists of denaturation hydrocarbon resin according to claim 1.

[Translation done.]